which the *H. medicinalis* of Europe is the type, but nevertheless possesses peculiarities perhaps rather more than specific. Its characters, generic and specific, are as follows:

HIRUDO DECORA.

Say: Long's Expedit. vol. ii, 1842, Append. 268. Moquin-Tandon: Monog. Hirud. 1846, 344. Diesing: Syst. Helm. i, 1850, 474. Wood and Bache: United States Dispensatory.

Body elongated, compressed cylindroid, narrowing anteriorly, laterally subacute; in motion convex above, flat below, with the margins compressed, thin, acute and somewhat wavy; composed of from 90 to 94 annuli, which are uniform and smooth. Head continuous with the body. Mouth obliquely terminal, bilabiate; the upper lip prominent, semiovate, obtuse, or from contraction of the tip emarginate; lower lip forming the inferior portion of the first annulus; the lips together acting as an acetabulum ovoid or obcordate in form. Eyes 10, arranged in horse shoe form, the anterior 8 above the upper lip, the posterior pair separated from the others by the first annulus. Acetabulum subbasilar, ventral, sessile, circular. Anus dorsal, above the acetabulum. Male aperture perforating the 25th annulus, with the lips more or less prominent. Female aperture between the 29th and 30th annuli. A group of four papillæ situated back of the latter on the 34th to the 36th annuli inclusive. Jaws three, semicircular, laterally compressed, furnished with 55 teeth, which have an acute curved summit and an expanded bilobed base. Oesophagus short and narrow compared with that of *Aulastomum*, furnished with 6 longitudinal folds, of which three coarse ones descend from the jaws and three narrow ones are intermediate.

Color. Dorsal surface olive green, with a median irregular band and a lateral line of darker hue of the same kind; a median row of reddish brown dots, and a lateral row of black dots. Ventral surface reddish brown, extending slightly above the lateral margin, devoid of spots, or more or less maculated with black. Acetabulum colored like the back above and the belly below.

In the genus *Hirudo*, as characterized by Diesing, (Syst. Helm. i, 465), and to which he assigns 9 recognized species, the jaws are furnished with from 60 to 70 teeth, and the male aperture is situated between the 24th and 25th segments. Moquin Tandon (Monog. Hirud. 1846, 326) likewise assigns the latter as the position of the male aperture in the genus *Hirudo*.

The position of the generative apertures in *H. decora* often appear more or less discolored, or of a dull purplish hue, and the same is the case with the group of papillæ back of them. The latter do not exist in the medicinal leech of Europe. They are quite conspicuous in ours. I have suspected that they were provided for the adherence of individuals in sexual intercourse, and this view is confirmed by Mr. S. J. Moore, the well known professional leecher and bleeder of this city. Mr. Moore informs me that in copulo two individuals adhere in the position of the papillæ and make two turns of a spiral upon each other.

The red and blacks spots of the back contain from 20 to 22 in each row.

Length up to 7 inches, by 8 lines in breadth posteriorly; and the acetabulum 3 lines in diameter.

Notice of some remains of Extinct PACHYDERMS.

BY JOSEPH LEIDY, M. D.

DICOTYLES NASUTUS.

Extinct Peccary. Leidy: Pr. A. N. S. 1860, 416.

An extinct species of Peccary, obviously different from any one heretofore noticed, is indicated by a specimen submitted to my examination by the late Dr. David D. Owen. It was found in digging a well in Gibson Co., Indiana, at a depth of between 30 and 40 feet.

The specimen consists of the fore part of the snout, containing on one side of the jaw the upper canine and anterior two molar teeth. It belonged to a species larger than any of those previously noticed. The face in advance of the molars was more prolonged proportionately than in other species, but was also proportionately narrower.

The two premolars retained in the fossil are blunted from wear, but are clearly constructed after the same pattern as those of the living Peccaries.

The incisors, as indicated by their alveoli, held the same relative position as in the latter, but appear to have been comparatively feeble organs, and the anterior pair were but slightly larger than the lateral ones.

The upper canine has the same form and mode of insertion as in the recent Peccaries, but is proportionately smaller.

The anterior ends of the coössified premaxillaries project to a much greater degree in advance of the incisors than in the other known Peccaries. They are also more truncate in appearance; and on each side of the intermaxillary notch they exhibit a conspicuous pit, apparently for the attachment of a pair of muscles intended for a longer and more mobile snout than is possessed by the living Peccaries.

The measurements of the fossil compared with those of other Peccaries, are as follows:

	D. nasutus.	compressus	labiatus.	torquatus.
First molar to front of premaxillaries,	58 lines.	46 lines.	41 lines.	31 lines.
" " to canine alveolus,	30 "	23 "	14 "	8 "
Length of jaw in advance of canines,	24 "	19 "	20 "	17 "
Breadth outside of canine alveoli,	28 "	29 "	31 "	26 "
Ant. post. diam. first premolar,	$4\frac{1}{2}$ "	$4\frac{3}{4}$ "	5 "	$4\frac{1}{4}$ "
" " " second "	$5\frac{1}{2}$ "	5 "	5 "	$4\frac{1}{2}$ "
" " " base of canine,	$5\frac{3}{4}$ "	$6\frac{1}{2}$ "	8 "	6 "

Mr. Timothy Conrad has recently submitted to my inspection the crown of a second molar tooth obtained by Dr. P. Knieskern, from a miocene formation of Shark River, Monmouth Co., New Jersey.

The tooth bears nearly the proper relation of size with the premolars in the specimen above described of *D. nasutus* to belong to the same animal, but the fact of its being found in a miocene deposit, while the latter is of supposed post-pliocene age, renders it probable that it pertains to a different species.

The crown has a strong basal ridge, hardly interrupted at the most prominent portion of the lobes externally and internally. The lobes present the same form and relative position as in *D. labiatus*. They are considerably worn, exhibiting on their summits exposed tracts of dentine; nearly circular on there external, and larger and irregularly reniform on there internal. The measurements of the tooth in comparison with the corresponding tooth of other species are as follows:

Fossil tooth,	ant. post. diam.	$9\frac{1}{4}$ lines,	trans.	$8\frac{1}{4}$ lines.
D. labiatus,	" "	7 "	"	$6\frac{3}{4}$ "
D. torquatus,	" "	$6\frac{1}{2}$ "	"	$5\frac{1}{2}$ "
D. compressus,	" "	$7\frac{3}{4}$ "	"	$6\frac{3}{4}$ "

ANCHIPPUS TEXANUS.

An apparent solipedal pachyderm, allied to *Anchitherium*, is indicated by a specimen consisting of the greater and more characteristic portion of an upper molar tooth submitted to my examination by Dr. B. F. Shumard. It was obtained from "Hutchen's well," from a yellow sandstone, supposed to be of miocene age, at a depth of 50 feet below the surface, in Washington Co., Texas.

The size of the tooth, as well as the general form and proportions, have been nearly as in the European *Anchitherium aurelianense*. Six lobes, as in the latter, enter into the constitution of the crown. The external lobes, imperfect, appear

to have had the same form as in *Anchitherium*. The inner lobes also have the same form but are proportionately less robust, while the median lobes are more so. The postero-median lobe pursues the same course as in *Anchitherium* and likewise, as in this, joins the outer lobes at their conjunction. From near the middle of its course it gives off a process directed towards the interval of the antero-internal and antero-median lobes and ceasing short of them. This process looks as if disposed to join the contiguous portion of the antero-median lobe, together with it to form a crescentoid lobe, embracing the antero-external one, as in the corresponding columns of equine teeth. No such arrangement exists in *Anchitherium*. A triangular tubercle, as in the latter genus, occupies the space at the back of the crown, and it appears as if its anterior angle had a disposition to join the contiguous portion of the postero-median lobe, to form with it a crescentoid lobe, in like manner as in the former case, to embrace the postero-external lobe.

The construction of the tooth clearly indicates an animal of intermediate character to *Anchitherium* and *Equus*.

ANCHIPPODUS RIPARIUS.

Mr. Timothy Conrad has submitted to my examination the specimen of a tooth of rather enigmatical character, which I suspect to indicate a *pachyderm* at least with solipedal affinities. It was obtained by Dr. Knieskern, from a tertiary formation, either eocene or miocene, of Shark River, Monmouth Co., New Jersey.

The tooth would appear to correspond with a first or second lower true molar of a ruminant, or with any of the series between the first and last molars in *Palæotherium* or *Anchitherium*. The crown is much worn, even so as to obliterate some of its distinctive features. It is composed of a pair of demi-conoidal lobes, one before the other, the plane side internally, the convex and sloping side externally. From each lobe descends a fang in the usual manner. No fold, and only a feeble basal tubercle occupies the deep external angular interval between the lobes. The worn triturating surface presents, on the anterior lobe, a wide crescentoid tract of exposed dentine, slightly concave and bordered with thick enamel. The anterior arm of the crescent is obtuse; the posterior extends less inwardly and is acute. The posterior lobe exhibits a half ellipspoidal tract of dentine, nearly straight at its inner margin, and bordered with enamel, except behind, where it has all disappeared. The dentinal tracts of the two lobes are separated by a narrow isthmus. The enamel is thick, black and shining, and though it appears to have originally been more or less rough, yet it is now nearly smooth. The measurements of the specimen in its present condition are as follows:

Fore and aft diameter of the crown 10 lines; breadth of posterior lobe obliquely at base of the enameled crown $9\frac{1}{2}$ lines; breadth of anterior lobe in same position $8\frac{1}{4}$ lines; breadth of worn triturating surface of posterior lobe 6 lines; breadth of do. on anterior lobe $5\frac{1}{2}$ lines.

LOPHIODON OCCIDENTALIS.

Dr. Hayden's last collection of Mauvaises Terres fossils contains a last inferior molar tooth which has all the characters ascribed to the corresponding tooth of the extinct tapiroid genus *Lophiodon* of European eocene formations.

The crown is composed of a pair of transverse hill-like lobes, as in the lower molars of the Tapir with the addition of a well developed posterior conoidal talon. The principal lobes have subacute summits slightly concave transversely, their posterior surface sloping, their anterior surface concave, and their exterior sides convex. The talon is about half the height of the principal lobes, convex behind, and with the front surface inclining from the middle on each side. The crown is bounded in front by a basal ridge. Fore and aft diameter of the crown $9\frac{3}{4}$ lines; transverse diameter in front $6\frac{1}{2}$ lines.

I have a suspicion that this specimen belonged to the lowest bed of the

White River tertiary formations, and with associated remains of *Hyopotamus* and *Titanotherium*, probably indicates the end of the eocene, which was succeeded by the more extensive miocene deposits of the Mauvaises Terres, and the pliocene deposits of the Niobrara River.

On some Cretaceous REPTILIA.

BY E. D. COPE.

NATANTIA.

CLIDASTES Cope.

This genus is established on a species represented by a single dorsal vertebra, which was found by my friend Prof. O. C. Marsh, of Yale College, in a marl pit near Swedesboro', Gloucester Co., N. J. Its form is highly characteristic, and resembles considerably that of such genera of Iguanidæ as Euphryne and Dipsosaurus, and in some degree those of Cyclura and Iguana. It differs from the dorsals of known serpents in having a zygosphen on the plane of the anterior zygapophysis, and in having the costal articular surface continuous with and covering the diapophyses. It differs from the genera of Iguanidæ mentioned in the very small amount of upward direction which the face of the articular ball of the centrum exhibits. This face is nearly vertical, meeting the lower plane at a slightly less angle than the upper. It is much more strongly convex transversely than vertically. The neural arch rises from the anterior three-fourths of the centrum, the zygapophysis coming off from the edge of the cup, and the diapophysis from ·2 of the length behind it. The zygapophysis is more prominent than the zygosphen, and the sinus between them is floored by a thin horizontal plate at its fundus.

The general form of the vertebra is depressed. The zygapophyses are spread apart, and their outer margin continues in a straight line from the diapophyses. The diapophyses are directed upwards, and are vertical compressed in form; they are opposite to about equal portions of the centrum and neural arch. Their posterior face is slightly concave, and the upper face behind forms, with the neural arch, a deeply concave line. The convexity of the ball is not so great as in the Crocodilia, and, with the thin lipped cup, resembles that of Mosasaurus; this resemblance is heightened by the slightly depressed upper outline of the ball, and the form of the diapophyses. The inferior face of the centrum presents a median obtuse ridge, and nearly flat lateral faces, which are concave antero-posteriorly. The cup is broader than deep, and has a slightly concave outline; the base of the zygosphen originates opposite the middle of the neural canal. The latter is a broad vertical oval.

CLIDASTES IGUANAVUS Cope, sp. nov.

In this species the articular face of the zygosphen is inclined at an angle of 45°, while that of the zygapophysis is a little more horizontal. The posterior zygapophyses are broken off.

	In.	Lin.
Length of centrum below	2	0·5
Width of cup	1	6·8
Depth "	1	1·5
Width between extremities diapophysis	3	0·5
Depth articular face diapophyses		10·5
From diapophysis to end zygapophysis		9
Between zygosphen and zygapophysis		4·5
Width centrum anterior to ball		15
Width of neural canal behind		5·5

While there is a probability that this animal was a forerunner of the Iguanian type of Lacertilia, it possessed, no doubt, strong relationships to Mosasau-